A "Filmy Fern" in the Genus Cystopteris[1]

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The northwestern part of the Mexican state of Oaxaca along the border with Puebla is relatively poorly collected botanically. Much of the area between Huajuapan de León, Oax., and Tehuacán, Pue. is extremely dry semidesert. A dry valley extends from Tehuacán to Teotitlán del Camino in Oaxaca. From the latter city there is a road to the northeast that goes over the mountains to the village of Huautla de Jiménez. This road has been best known in recent years for its hallucinogenic fungi, hippies, and police—in that order. The road rises steeply out of Teotitlán and snakes its way up to the top of a ridge, crossing it at Puerto Soledad. The upper parts of the slope are forested with pine and oak. The forest at the top is the wettest and consists largely of oaks and some *Podocarpus*. The wet winds from the Gulf of Mexico keep this region moist the year around. I have collected over 100 species of ferns within two miles of the pass, where the wet forest is nearly continuous. The road continues near the top of the ridge, dives to the bottom of another valley and climbs part of another ridge before reaching Huautla de Jiménez. Most of the road is heavily cultivated or at least cut over. After passing Puerto Soledad, which is 19 miles by road from Teotitlán, the forest is soon interrupted by agriculture, but there are small patches of forest and several waterfalls by the road.

In 1970 Mr. Steven Leonard and I collected a remarkably filmy fern on the ground in the spray beside a small waterfall. At first it looked to us somewhat like *Trichomanes radicans,* for its leaf tissue was only one or two cells thick. But on closer examination I found that the plant had tiny dorsal sori with hood-like indusia typical of *Cystopteris.*

A similar specimen was found at the United States National Herbarium from Veracruz, also from a waterfall. This suggests that the thin frond texture may be due to constant waterfall spray, but apparently this is not the case. A plant was grown for nearly a year in the greenhouse of the New York Botanical Garden, during which time the new leaves continued to be as filmy as those of the original plant. Consequently, I am describing the plant as a new species:

Cystopteris membranifolia Mickel, sp. nov. Fig. 1.

Rhizoma late repens, apice 1–5 mm ultra stipites protrudenti, sparse squamatum, paleis brunneis, ovatis, nitentis. Stipites remoti, viridi, longitudine ½-⅔ laminas aequantes. Lamina lanceolata vel ovato-lanceolata, plerumque pinnato-pinnatifida, usque ad 18 cm longa, 6 cm lata, membranacea, fere glabra, cellulis 1- vel 2-stratosis; pinnae deltoideo-lanceolatae, sessiles; pinnulae late oblongae vel ellipticae, interdum incisae, apicibus obtusis, marginibus dentatis, venis in dentis terminantibus. Sori rotundati, indusiis parvis, evanidis. Sporae bilaterales, tuberculato-echinatae, 26–32 μ longae.

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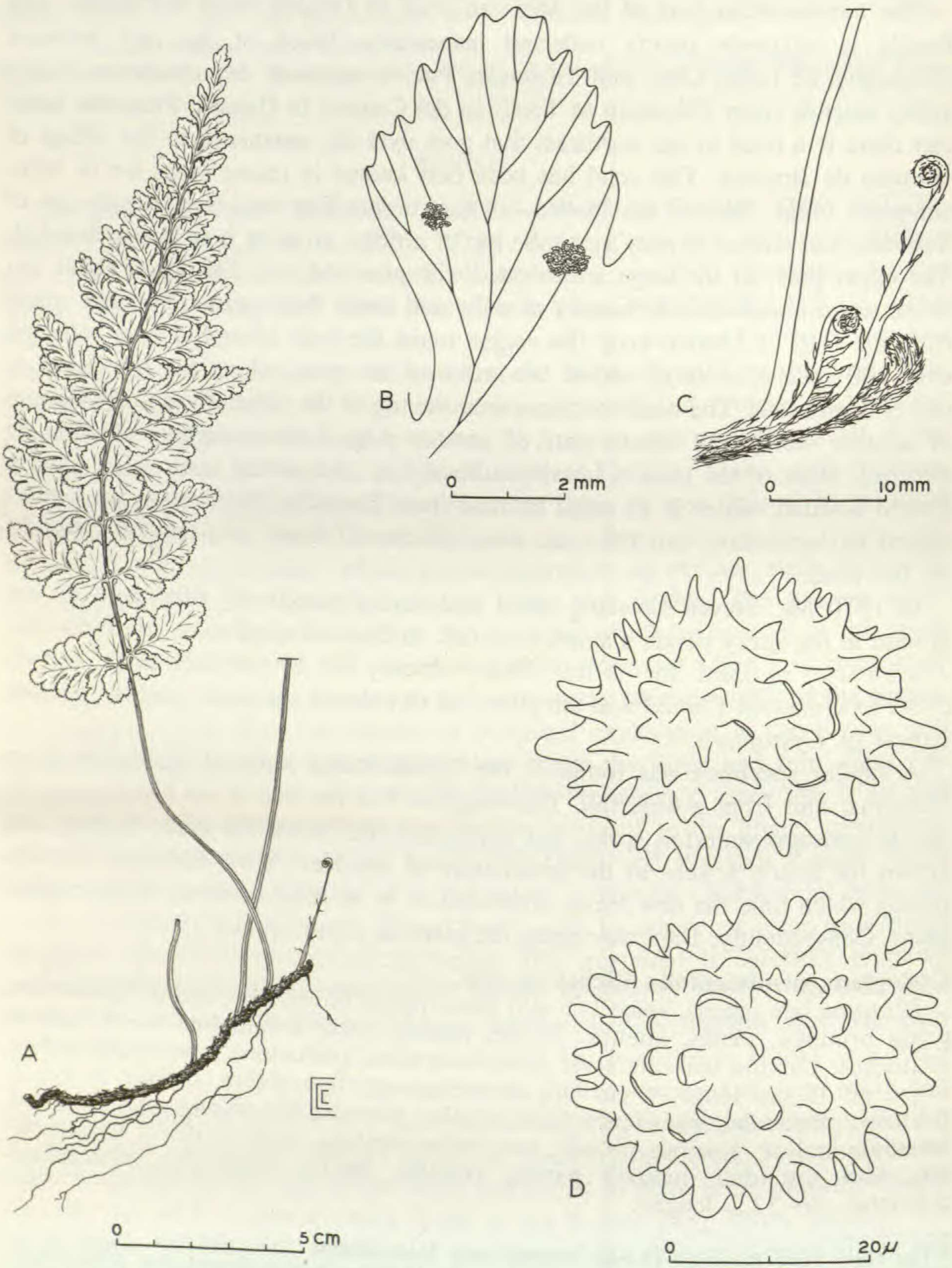

Fig. 1. *Cystopteris membranifolia*. A. Habit. B. Pinnule. C. Rhizone apex. D. Spores.

TYPE: About 33 km NE of Teotitlán del Camino on road to Huautla, by waterfall in cut-over woods, Distrito Teotitlán, Oaxaca, Mexico, ca. 7000 ft alt, 15 Sept 1970, *Mickel 4544* (NY; isotype US).

Other collection seen: Teocelo Falls, Veracruz, Mexico, *S. N. Rhoads s.n.*, March 1899 (US).

This species resembles most closely *Cystopteris protrusa* in its wide-creeping rhizome, which protrudes beyond the leaves, and in its veins, which end in the teeth. But it differs from *C. protrusa* in having a narrower blade, broader pinnules, thinner lamina, and blunter spines on the spores. Furthermore, the rhizome of *C. protrusa* is clothed with fine hairs that resemble root hairs in addition to the sparse, pale scales, whereas *C. membranifolia* has only darker and shinier scales. Although most of the spores seem to be normal, some are much smaller and more irregular in shape and some are somewhat larger and rounder. Whether these reflect irregularities in reproduction or whether this is normal for the species cannot be determined. There are few sporangia per sorus and few sori on the plants, and so the sample is small. The size of the normal spores is precisely that reported by Blasdell[2] for diploid plants of the genus.

I plan to return to the locality with hopes of collecting living plants for cultivation in our new research greenhouse.

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[2] Blasdell, R. F. 1963. A monographic study of the fern genus Cystopteris. Mem. Torrey Bot. Club **21**(4): 1–102.

SHORTER NOTES

THE FIRST PERUVIAN RECORD OF ELAPHOGLOSSUM CARDENASII WAGNER.—The most peculiar species of the genus *Elaphoglossum* is the one called *E. cardenasii* by Wagner (Bull. Torrey Bot. Club **81:** 61–67, *figs. 1–7*. 1954). It has pedately lobed fronds, which is most peculiar in a genus of several hundred species characterized by having simple, unlobed blades.

The type and isotype specimens of this rare fern are Bolivian. Since its description, only one other specimen was known, a collection from the same general area reported by Stolze (Amer. Fern J. **58:** 31–32. 1968). During a recent visit to the Herbarium Vargasianum, in Cuzco, Peru, which now is deposited at the Universidad del Cuzco, two specimens collected by C. Buës in a nearby locality (Alturas de Sicre, 10,000 ft., June 1924) were found to be *E. cardenasii* Wagner. These are the first record of the species outside Bolivia. One of the specimens bears an annotation by Wm. Maxon: "a monstrous form." No fertile blades are present, but a regular progression of juvenile fronds are present which might provide data for solving the development of the leaf structure of this interesting fern.—*Luis Diego Gómez P., Herbario Nacional de Costa Rica, Apartado 749, San José, Costa Rica.*